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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/563,877	01/09/2006	Hironori Endo	Q92020	1958

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EXAMINER	
GARCIA JR, RENE	

ART UNIT	PAPER NUMBER
2853	

NOTIFICATION DATE	DELIVERY MODE
01/26/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USPTO@sughrue.com
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Office Action Summary	Application No.	Applicant(s)	
	10/563,877	ENDO, HIRONORI	
	Examiner	Art Unit	
	RENE GARCIA JR	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 November 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,5,8,9,17-19 and 22-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5,8,9,17-19 and 22-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 2, 5, 8, 9, 17-19, 22-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tullis et al. (US 6,517,180) in view of Otsuki et al. (US 6,527,360), Owens (US 6,215,557).

Tullis et al. disclose the following claimed limitations:

*regarding claims 2, 23, printing apparatus**/printer, 10/** (fig. 1; col. 4, lines 40-51), comprising:

*transport unit that transports a medium**/paper, 18/** in a transporting direction (col. 4, lines 49-56)

*head**/inkjet print head, 16/** that performs recording on a medium**/18/** using ink and that moves in a moving direction(fig. 1; col. 4, lines 45-61)

*first sensor**/optical detector, 92/** (fig. 10; col. 12, lines 30-45) moves in said moving direction together with said head**/16/** and that detects an edge of said medium**/18/** (col. 12, lines 45-50)

*second sensor**/optical detector, 26/** (fig. 1; col. 4, line 64 – col. 5, line 8) that moves in said moving direction together with said head**/16/** and that detects a pattern formed on said medium**/18/** by said head**/16/**

*regarding claims 1, 22, first sensor**/92/** detects regular reflection light from said medium**/18/** (col. 13, lines 46-57)

*second sensor**/26/** provided separately from said first sensor**/92/**, detects diffuse reflection light from said medium**/18/** (col. 7, lines 13-55)

*said head has a plurality of nozzles (fig. 2; ABS; col. 4, lines 40-51)

*regarding claim 8, first sensor**/92/** includes a light-emitting section**/light sources, 40 & 42/** (fig. 3; col. 7, lines 13-27) and a light-receiving section**/sensor element array, 32/** (fig. 2; col. 5, lines 13-15)

*light-emitting section**/40, 42/** of said first sensor**/92/** irradiates light onto said medium**/18/**

*light-receiving section**/32/** of said first sensor**/92/** receives regular reflection light from said medium**/18/** (col. 13, line 46 – col. 14, line 3; col. 3, lines 13-23; first sensor92/ and second sensor/26/ utilize similar structures col. 12, lines 34-45)

*regarding claim 9, second sensor**/92/** includes a light-emitting section**/light sources, 40 & 42/** (fig. 3; col. 7, lines 13-27) and a light-receiving section**/sensor element array, 32/** (fig. 2; col. 5, lines 13-15)

*light-emitting section**/40, 42/** of said second sensor**/92/** irradiates light onto said medium**/18/**

*light-receiving section**/32/** of said second sensor**/92/** receives regular reflection light from said medium**/18/** (col. 5, lines 13-15; col. 7, lines 13-67; col. 3, lines 13-23)

*regarding claims 17, 30, head**/16/** can eject said ink while moving in a forward pass and in a return pass (col. 4, lines 45-58)

*locations at which ink is to be ejected from said head**/16/** are determined in accordance with the detection result of said second sensor**/26/** (col. 4, line 64 – co. 5, line 8)

*regarding claims 18, 31, type of said medium**/18/** is detected from the detection result of said first sensor**/92/** and the detection result of said second sensor**/26/** (col. 11, line 62 – col. 12, line 13; col. 12, lines 54-60)

*regarding claims 19, 33, head**/16/** performs the recording on said medium**/18/** in accordance with the type of said medium**/18/** (col. 12, lines 12-13; col. 12, lines 58-60)

*further regarding claim 23, printing system comprising a computer (known in the art to utilize a host device/computer/ with a printer to print images)

*regarding claim 24, carry unit is controlled in accordance with the detection result of said first sensor**/92/** (col. 11, line 62 – col. 12, line 60 – determination of medium type effects how the image is to be printed)

*regarding claims 25, 32, head**/16/** is controlled in accordance with the detection result of said first sensor**/92/** (col. 12, lines 56-60)

*regarding claim 26, first sensor/**92/** detects a lateral edge/**sides/** of said medium/**18/**; and a region onto which ink is to be ejected from said head/**16/** is determined in accordance with the result of detecting said lateral edge/**side/** (col. 13, line 64 - col. 14, line 3)

*regarding claim 27, first sensor/**92/** detects an upper edge/**leading edge/** of said medium/**18/** (fig. 10; col. 13, lines 46-63)

*transport unit transports said medium/**18/** to a print start position in accordance with the result of detecting said upper edge/**leading edge/** (col. 12, line 61 – col. 13, line 63)

*regarding claim 28, first sensor/**92/** detects a lower edge/**bottom edge/** of said medium/**18/** (col. 13, lines 46-63)

* region onto which ink is to be ejected from said head is determined in accordance with the result of detecting said lower edge/**bottom edge/** (col. 13, lines 46-63; col. 14, lines 15-25)

*regarding claim 29, ejection test of said head/**16/** is performed in accordance with the result of detecting said pattern with said second sensor/**26/** (col. 5, lines 2-8; details at col. 9, line 13 – col. 10, line 44)

Tullis et al. does not disclose the following claimed limitations:

*regarding claims 2 and 23, wherein said first sensor is provided further upstream with regard to said transporting direction than said second sensor

*plurality of block patterns are formed on said medium lined up in a straight line in said moving direction

*each of said plurality of block patterns is respectively formed by a different nozzle

*said second sensor detects said plurality of block patterns that are lined up in said moving direction while said second sensor moves once in said moving direction

*regarding claim 5, light-emitting section and said light-receiving section of said first sensor are arranged in a said transporting direction

*light-emitting section and said light-receiving section of said second sensor are arranged in said moving direction

*regarding claim 34, direction in which said light-emitting section and said light-receiving section of said first sensor is different from a direction in which said light-emitting section and said light-receiving section of said second sensor are arranged

Otsuki et al. teaches the following:

*regarding claims 2 and 23, wherein said first sensor**/33/** is provided further upstream with regard to said transporting direction than said second sensor**/33b/** (fig. 2, 15, 20, 21, 25; col. 6, lines 41-49; col. 7, lines 11-20; col. 16, lines 47-61 – all are related to two sensors being utilized for paper edge detection and positioning on

carriage; col. 16, line 62 – col. 17, line 6; col. 19, lines 32-40; col. 22, lines 53 – col. 65 – all teach alternative positions for the sensors, therefore the placement of the sensors in Otsuki et al. are based on design choice and show that same consideration can be used for placement of sensors of Tullis et al.)

*regarding claims 34 and 5, light-emitting section**/33d/** and said light-receiving section**/33t/** of said first sensor**/33/** are arranged in said transporting direction (fig. 2, 20; col. 7, lines 22-27)

*light-emitting section**/33d/** and said light-receiving section**/33t/** of said second sensor**/33b/** are arranged in said moving direction (fig. 20, 21; col. 7, lines 13-17; col. 16, lines 47-48)

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize first sensor is provided further upstream with regard to said transporting direction than said second sensor; light-emitting section and said light-receiving section of said first sensor are arranged in said transporting direction, light-emitting section and said light-receiving section of said second sensor are arranged in said moving direction; and direction in which said light-emitting section and said light-receiving section of said first sensor is different from a direction in which said light-emitting section and said light-receiving section of said second sensor are arranged as taught by Otsuki et al. into Tullis et al. for the purpose of providing a sensor system that identifies both media edge and alignment correction based on a chosen design. The combination of Otsuki et al. and Tullis et al. is based on the both being

related to the same art of sensors utilized on carriage systems for printer features determination.

Owens teaches the following:

*regarding claims 2 and 23, plurality of block patterns**/test pattern, 32; test images, 33/** are formed on said medium**/18/** (fig. 3; col. 2, line 61- col. 3, line 5) lined up in a straight line in said moving direction**/arrow, 26/** (fig.1; col. 3, lines 33-50)

*each of said plurality of block patterns**/33/** is respectively formed by a different nozzle**/21/** (col. 2, line 64 - col. 3, line 3; further background – col. 3, line 64 – col. 4, line 9)

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize a plurality of block patterns which are formed on said medium lined up in a straight line in said moving direction; and each of said plurality of block patterns is respectively formed by a different nozzle as taught by Owens into Tullis et al. for the purpose of detecting a missing nozzle. While Owens teaches the aspect of detecting is a visual [manual] process carried out by a user, it is known in the art to perform such task with optical means, thus achieving the same function of determining missing nozzle(s). Yoshino et al. (US 5,898,443), for example, teaches that the invention is directed to visual inspection via human interaction to reduce cost, however does teach that optical sensors can be utilized to achieve same functionality with regards to detection of defective nozzles, see col. 16, lines 52-56.

Owens further teaches that the test images/33/ [block patterns] are printed in a rectangular grid, with each being a square block of 0.25 to 0.5 inch in length (col. 3, line

64 – col. 4, line 9). Tullis et al. teaches the process of forming portions/102, 104, 106, 108/ on a medium and using an optical detector/92/ to read information of portions/102, 104, 106, 108/. The portions/102, etc/ are all of a segment in length, Y, and known in the are to be with the range of 0.25 to 0.5 inches depending on printhead size. (col. 5, line 46 – col. 6, line 2; col. 13, lines 5 – 19), therefore capable of being in a single pass via the optical detector/92/ of Tullis et al..

3. Claims 2 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tullis et al. (US 6,517,180) in view of Otsuki et al. (US 6,527,360) and Endo et al. (US 7,198,349).

Tullis et al. and Otsuki et al. disclose all the claimed limitations, as rejected above; therefore see above for rejection of relevant limitations, however fail to teach the following claim limitations:

*regarding claims 2 and 23, plurality of block patterns are formed on said medium lined up in a straight line in said moving direction

*each of said plurality of block patterns is respectively formed by a different nozzle

*sensor detects said plurality of block patterns that are lined up in said moving direction while said second sensor moves once in said moving direction

Endo et al. teaches the following:

*regarding claims 2 and 23, plurality of block patterns**/block-shaped test patterns, 412/** are formed on said medium lined up in a straight line in said moving direction (fig. 12, 13; col. 13, line 63 – col. 14, line 27)

*each of said plurality of block patterns**/412/** is respectively formed by a different nozzle (col. 14, lines 1-22)

*sensor detects said plurality of block patterns that are lined up in said moving direction while said second sensor moves once in said moving direction (col. 16, line 45 – col. 17, line 7)

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize a plurality of block patterns are formed on said medium lined up in a straight line in said moving direction; each of said plurality of block patterns is respectively formed by a different nozzle; and sensor detects said plurality of block patterns that are lined up in said moving direction while said second sensor moves once in said moving direction as taught by Endo et al. into Tullis et al. and Otsuki et al. for the purpose of detecting nozzle that are not properly ejecting.

Response to Arguments

4. Applicant's arguments with respect to claims 2 and 23 have been considered but are moot in view of the new ground(s) of rejection. Owen (US 6,215,557) teaches the use of test pattern including test images composed of an individual nozzle, where the test image is of rectangular form (0.25 to 0.5 inch each side).

5. Owen fails to teach that the test pattern is scanned with a sensor to perform the determination of missing nozzle(s), but relies on a visual user response via a host

computer. It is recognized in the art that such a function can be accomplished by a sensors means, and a person having ordinary skill in the art would recognize the ability to perform such a function automatically/sensor system/. Furthermore, it is within reason to utilize such a sensor system as taught by Tullis et al. Yoshino et al. (US 5,898,443), for example, teaches this aspect as outlined in rejection above.

6. Applicant argues, pages 11 and 12, that Otsuki only teaches the use of photoreflectors to detect paper, and at specific points within the printing system. The 35 U.S.C 103(a) rejection is based on Otsuki teaching alternative placement of the sensor. The sensor is not required to be at a set location in relation to the carriage/printhead. It teaches the capability to place the sensor(s) at any desired location as long as it can perform its desired function. Therefore it is reasonable for a person having ordinary skill in the art to rearrange the location of sensors utilized in Tullis et. thus achieving the claimed limitations. It is within capabilities of a person having ordinary skill in the art since the limitations are broad in that they are not restricted for specific detection limitations. The sensors only requirement is that they are able to detect a pattern, in one scan, and an edge of a medium; respectively.

Communication with the USPTO

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to RENE GARCIA JR whose telephone number is (571)272-5980. The examiner can normally be reached on M-F 8:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/R. G./
Examiner, Art Unit 2853

/Stephen D Meier/
Supervisory Patent Examiner, Art Unit 2853